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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,894	11/23/2001	Bahram Javidi	UCT-003	7643

23413 7590 03/06/2006

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EXAMINER

DINH, MINH

ART UNIT	PAPER NUMBER
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2132

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,894

Applicant(s)

JAVIDI ET AL.

Examiner

Minh Dinh

Art Unit

2132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

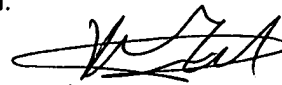
Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152:

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


KAMBIZ ZAND
PRIMARY EXAMINER

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment filed 12/19/2005. Claims 1-3, 5-6, 11-19, 24-26, 29 and 31 have been amended.
2. Claim 31 has been amended, but is not indicated as being "currently amended". Appropriate correction is required.

Response to Arguments

3. Applicant's arguments with respect to claims 1-25 have been considered but are not persuasive. Applicant's amendments have necessitated a new search and new grounds of rejection.
4. Applicant's arguments with respect to claims 26-35 have been considered but are not persuasive. Regarding claim 26, the amended claim recites the limitation: "means for decrypting the converted received encrypted data to recover said information using threshold sampling to avoid overlap between adjacent data in the converted encrypted data". The Specification discloses that the converted received encrypted data is optically decrypted using a random phase key (fig. 5; page 16, last paragraph – page 17, 1st paragraph). However, the Specification does not disclose decrypting the converted received encrypted data to recover said information using threshold sampling to avoid overlap between adjacent data in the converted encrypted data.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 26-35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claim 26, the amended claim recites the limitation: "means for decrypting the converted received encrypted data to recover said information using threshold sampling to avoid overlap between adjacent data in the converted encrypted data". The Specification discloses that the converted received encrypted data is optically decrypted using a random phase key (fig. 5; page 16, last paragraph – page 17, 1st paragraph). However, the Specification does not disclose decrypting the converted received encrypted data to recover said information using threshold sampling to avoid overlap between adjacent data in the converted encrypted data. The new limitation was not disclosed in the Specification as originally filed and, therefore, is considered new matter. Claims 29 and 31 are rejected on the same basis as claim 26. Claims that are not specifically addressed are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 103

7. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Javidi et al (5,903,648) in view of Sun et al. ("All-Optical Parallel-to-Serial Conversion by Holographic Spatial-to-Temporal Frequency Encoding") and Marom et al. ("Analysis of Spatial-Temporal Converters for All-Optical Communication Links")

Regarding claim 1, which is exemplary of claim 17, Javidi discloses a method for encrypting optical images. Javidi further discloses that an image is optically encrypted, and that the resulting encrypted data is stored and read out in the spatial domain (Abstract; col. 3, lines 16-60; fig. 7). Javidi also discloses transmitting the encrypted data in the spatial domain, receiving and decrypting the encrypted data to recover the image (fig. 16).

Javidi disclose transmitting the data in the spatial domain. Javidi does not disclose converting the data from the spatial domain to the temporal domain prior to transmission and converting the converted data to the spatial domain at reception. Sun discloses an optical communication method in which data is converted from the spatial domain to the temporal domain prior to transmission, transmitted and converted from the temporal domain to the spatial domain at reception (p. 1728, left col., 1st - 2nd paragraphs; figures 1 and 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Sun method of communication into the Javidi method of transmitting encrypted data such that the data is converted from the spatial domain to the temporal domain prior to transmission, transmitted and converted from the temporal domain to the spatial domain at reception. The motivation

for doing so would have been that parallel optical signals could be transmitted over long-distance optical fiber networks.

Javidi and Sun does not disclose using threshold sampling to avoid overlap between adjacent data at the receiving end. Marom discloses using threshold sampling to avoid overlap between adjacent data at the receiving end (Section 2A – Temporal Output of the Parallel-to-Serial Transmitter, page 2861, “The assumption that $1/\omega$ can be ... as n increases, preserving the energy in each bit pulse.”; Section 2B – Perfect Reconstruction of Serial-to-Parallel Receiver, page 2863, “The approximation made in the derivation of ... As $|n|$ increases, less energy is available for detection at the output.”) It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the Javidi method to use threshold sampling to avoid overlap between adjacent data at the receiving end, as taught by Marom. The motivation for doing so would have been that spatial data could be reconstructed without loss of information regarding the temporal overlap of pulse.

Regarding claims 2 and 18, Sun further discloses conversion of ultrashort light pulses which meet the limitation of ultrafast laser pulses (p. 1728, left col., 1st - 2nd paragraphs).

Regarding claims 3 and 19, Sun further discloses conversion of ultrashort pulses spread in the spatial domain according to their spectral components (p. 1730, left col., 2nd paragraph).

Regarding claim 4, Sun further discloses that the ultrashort pulses are spread in the spatial domain using diffraction (fig. 1; p. 1730, left col., 2nd paragraph).

Regarding claim 5, Sun further discloses an optical network for transmitting the converted data (p. 1728, left col., 1st paragraph).

Regarding claim 6, Sun further discloses that converting the data received to the spatial domain is implemented using ultrashort light pulses which meet the limitation of ultrafast laser pulses (p. 1728, left col., 1st - 2nd paragraphs).

Regarding claims 7-8 and 20-21, Javidi further discloses that the optical encryption includes double random phase encryption (Abstract).

Regarding claims 9 and 22, Javidi further discloses that the double random phase encryption includes phase encryption in the spatial domain and phase encryption in the frequency domain (col. 3, lines 16-38).

Regarding claims 10 and 23, Javidi further discloses storing of encrypted data comprises holographically storing said encrypted data (fig. 3).

Regarding claims 11, 13 and 24, Sun further discloses forming a real-time hologram using read-out data and a reference beam, reading out the real-time hologram, and converting the read-out hologram from the spatial domain to the temporal domain (fig. 1a).

Regarding claims 12, 14 and 25, Sun further discloses that reading out the real-time hologram comprises directing a diffracted ultrashort pulse at the real time hologram (fig. 1a).

Regarding claims 15-16, Javidi further discloses that decryption includes phase decoding in the spatial domain and in the frequency domain (col. 3, lines 39-60).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Dinh whose telephone number is 571-272-3802. The examiner can normally be reached on Mon-Fri: 10:00am-6:30pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on 571-272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2132

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MD

Minh Dinh
Examiner
Art Unit 2132


KAMBIZ ZAND
PRIMARY EXAMINER

MD
3/01/06